

**SEROTYPES AND VIRULENCE PROPERTIES OF SHIGA TOXIN  
PRODUCING *ESCHERICHIA COLI* FROM PATIENTS WITH  
DIARRHEA IN KAJIADO AND NAROK DISTRICTS OF KENYA**

**Willie Kipkemboi Sang**

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## ABSTRACT

The present study was designed to isolate, characterize and identify the enteric bacterial pathogens and to analyse virulence properties of pathogenic *E. coli* isolates among the patients with diarrhea from the Maasai community in Entosopia clinic, Kajiado district; and in Narok district hospital. The study was undertaken between August 2004 and July 2005. The study subjects were patients of all ages who had experienced acute diarrhea and were seeking treatment at the study sites. Those who were willing to participate and had not taken antibiotics within 72 hours of symptom onset were considered.

Stool samples from a total of 380 patients were investigated for the presence of enteric bacterial pathogens by culture. Bacterial diarrhea was observed in 141/380 (37.1%) of which ETEC comprised 42/380 (11.1%), STEC 34 (8.9%), Eagg 24 (5.3%), Einv 18 (4.7%) and EPEC 5 (1.3%). PCR analysis for STEC virulence factors showed that 18 (52.9%) isolates carried *Stx1* genes, 10 (29.4%) possessed *Stx2* genes, 5 (14.7%) carried both *Stx1* and *Stx2* and only one (2.9%) had *Stx2e* toxin gene. A total of 8 (23.5%) isolates carried an *ehxA* (enterohemolysin gene) and 7 (20.5%) isolates possessed an *eaeA* (intimin) gene. From 9 strains that exhibited adherence, 7 of them contained both intimin and haemolysin genes. Shiga toxin types Stx1 and Stx2e were present only in *eae*-negative strains and Stx2 was more frequent in *eae*-positive STEC strains. Infections with *eae*-positive STEC strains (46%) were more frequent in patients with

bloody diarrhea and especially in children under 5 years of age whereas *eae*-negative STEC infections dominated in adults. We identified 34 STEC strains belonging to 13 serotypes of which 5 have not been previously described as human STEC; O128, O148, O151, O164 and O27 serotypes. This study indicates that different types of STEC strains predominate in infant and adult patients, and that new types of STEC strains are present among the Maasai.

The antibiotic resistance data indicated that all *Shigella* isolates, other pathogenic *E. coli* and STEC were resistant to three or more antibiotics, including at least one first line treatment drug used in Kenya. None of these isolates showed any resistance to ciprofloxacin, cefotaxime and Ticarcillin/Clavulanic acid.

The 9% prevalence of STEC probably indicates that there is an existing problem of STEC infections that we are not aware of and there is urgent need to investigate it.